PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BC hydro

BRITISH
COLUMBIA

A Reconnaissance Survey Of Simpson Lake

A. R. Langston and A. R. McLean
1991

PWFWCP Report No. 110

105-02931/

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

Citation: A. R. Langston and A. R. McLean. 1991. A reconnaissance survey of Simpson Lake. Peace/Williston Fish and Wildlife Compensation Program, Report No. 110. 22pp plus appendices.

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A RECONNAISSANCE SURVEY OF

SIMPSON LAKE

WATERSHED: Pine River

DATE OF SURVEY: September, 6, 7, 1991

FIELD CREW LEADER: A.R. Langston

FIELD ASSISTANT: A.R. McLean

PEACE/WILLISTON FISH & WILDLIFE
COMPENSATION PROGRAM

B. C. HYDRO

and

B.C. ENVIRONMENT

REPORT PREPARED BY: A.R. Langston/A.R. McLean

RELEASED BY: Ted Euchner

Ted Euchner, Acting Regional Fisheries Biologist

LAKE: **Simpson**

SYSTEM NAME: Unnamed C.

A.S.A.P. REFERENCE NO.:

SYSTEM NO: 234-8419

DATA ON FILE FOR THIS SURVEY

Location	x	Dissolved O2/Temp. Profiles	x
Physical Data	x	Winter Dissolved 02/Temp. Profiles	x
Bench Mark	x	Netting Record	x
Terrain Features	x	Lake Catch Summary	x
Access	x	Individual Fish Data	--
Resorts and Campsites	x	Fish Preserved	--
Other Developments	x	Stomach Analysis	--
Obstructions and Pollutions	x	Scale Reading	--
Special Restrictions	x	Location of Inventory Sites	x
Aquatic Plants	x	Photograph Directory	x
Wildlife Observations	x	Appendices:	
Miscellaneous Comments	x	A: Water Chemistry Analysis	x
Lake Drainage	x	B: Tributary Stream Data	x
Fisheries Management Comments	x	Bathymetric Map Reduction	x
History of Previous Surveys	x	Bathymetric Map	x
Water Chemistry Summary	x		

LOCATION

Location: 35 km northeast of Mackenzie or 68 km west of Chetwynd
Elevation: 1204 m +/-
Latitude/Longitude: $55^0 32'04" : 122^0 40'15"$ U.T.M.: 10.5207.61542
Management Unit: 7-31 N.T.S. Map No.: 93-0/10

Drainage: Unnamed C. --> Pine River --> Peace River

PHYSICAL DATA

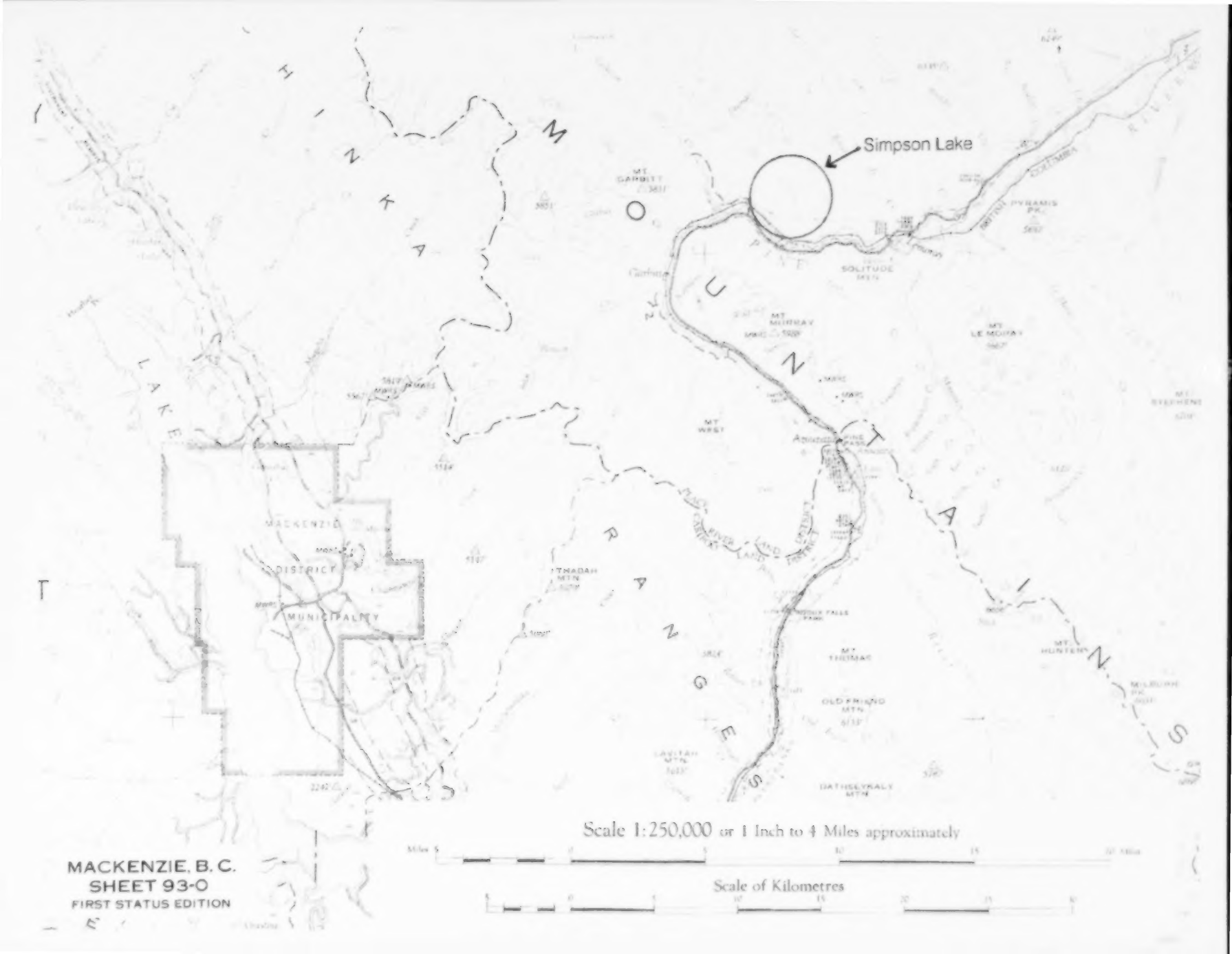
Lake Drainage Area:	--	km^2	Volume:	2 760 000 m^3
Water Surface Area:	312 000	m^2	FlushingRate:--	--
Area above 6 m contour:	116 500	m^2	Perimeter of Islands:	-- m
Shoreline Perimeter:	3 050	m	Number of Islands:	0
Maximum Depth:	21.5	m	Mean Depth:	8.8 m
Filterable Residue (TDS):	124	mg/l	Secchi Reading:	7.8 m

Sounding Device: Lowrance X-15 Elevation Source: Contour interpolation

BENCHMARK

(Iron spike, center of red circle) located at the lake outlet, 6.4 m from shore in a 35.0 cm diameter spruce tree. Bench mark set 2.0 m above current water level.

High water mark: Lake appears to be at maximum pondage.



MACKENZIE, B. C.
SHEET 93-O
FIRST STATUS EDITION

Lake: **Simpson**

TERRAIN FEATURES

Immediate Shoreline:

Shoreline is low to moderately sloped to water's edge, with the exception of the steeply sloped north end. Simpson Lake is treed to lake's edge with white spruce and some alpine fir. A one metre fringe of sedgegrass with some bog willow fronts the shoreline. A low lying marsh consisting of white spruce, alpine fir, sedgegrass, hudson bay current, bog willow and an unidentified wild grass is located at the north end of the lake. With the exception of the north and south ends, recreational access to and from the lake is good, but best suited to the east side, as road access runs parallel to the lake approx. 300 m away. Shoreline substrate is mainly organics, with some algae covered cobble/boulder noted, particularly at lake outlet. Gravel substrate (2mm-->64mm) was noted at inlet #2. With the exception of the steeply sloped northeast edge, the lake bottom drops off gradually.

Surrounding Country:

Forest cover is complete, mature, first growth, consisting of white spruce and alpine fir. The lake is surrounded by moderately sloped hills, with the exception of the steeply sloped forest peak located to the southeast. This peak rises approximately 200 m above lake level. A one square kilometre patch of what appears to be diseased or fire damaged trees is visible to the south. Regeneration is apparent.

Simpson lake is located within the Englemann spruce - subalpine fir biogeoclimatic zone.

Lake: **Simpson**

ACCESS

Directions:

Simpson Lake is a 10 minute helicopter flight from Silver Sands Lodge, which is located approximately 31 km north of Azouzetta Lake on Highway 97.

A recently constructed logging road runs parallel with the east shore. The road is located about 0.3 km from the lake. A rough trail passable by A.T.V.s accesses the lake. The trail originates at the logging road where the outlet stream passes through a culvert. The trail generally follows the outlet stream for approximately 800 metres to the, lake.

Road Type and Conditions:

The logging road is a good condition gravel road passable by two wheel drive. Access in the winter is unlikely.

Restrictions:

None noted.

RESORTS AND CAMPSITES

What appears to be a hunters camp, is located on the northeast shore. Moose bones were visible at this site.

OTHER DEVELOPMENTS

Portion of an old hunters/game trail were noted along the northeast shore.

Lake: **Simpson**

OBSTRUCTIONS AND POLLUTIONS

None observed. However, according to NTS Map No. 93-0/10 (edition 3), numerous falls/cascades exist on the outlet prior to its confluence with the Pine River. Some of these cascades/falls may be barriers to upstream fish passage.

SPECIAL RESTRICTIONS

None noted.

AQUATIC PLANTS

Aquatic plants were evident but sparse at either end of the lake and at the outlet area. The following species were identified in the field, none were collected.
Potamogeton sp. Equisetum fluviatile
Ceratophyllum sp.

WILDLIFE OBSERVATIONS

1 grouse	1 moose
1 grebe	numerous grayjays
numerous greater scaups	black bear scat

* signs indicate this is a high use area for moose.

MISCELLANEOUS COMMENTS

This lake was previously referred to as Grizzly Lake (as denoted on the bathymetric map). The official name of Simpson Lake was created by the BC Geographical Names Office of BC Environment. The name Simpson refers to World War 2 fatality RCAF Pilot Officer David A. Simpson.

An old raft was observed at lake outlet.
Evidence of human activity (flagging tape etc.) on the west shore area suggests possible future use.

Bathymetric map: The lake outline is from an enlargement of aerial photograph B.C. 85033 No. 60, flown July 1985.

Lake: **Simpson**

LAKE DRAINAGE

General:

Simpson Lake has numerous inlets and one outlet. The outlet flows approximately 6.0 km southeast to its confluence with the Pine River. A section of cascades is located approx. 100 m downstream of the lake. Numerous other cascades/falls are located further downstream, as derived from NTS Map No. 93-0/10 (edition 3).

Major Systems:

Unnamed C. - outlet

The first 200 m of the outlet (located at the east side of the lake) was investigated. The creek had an average wetted width of 7.0 m, average depth of 0.2 m, and a gradient of 1%, 40 m downstream of the lake. This section of stream afforded a low percentage of good juvenile rearing habitat, and minimal spawning habitat. The outlet passes through a cascade (9% gradient) approximately 100 m downstream of the lake. The next 100 m downstream of the cascade offered fair spawning and rearing habitat.

See point sample cards for additional information.

Minor Systems:

Unnamed C. - inlet #1

This creek enters the lake along the west shore. The first 180 m of inlet #1 was investigated. Approx. 50 m upstream of the lake, the wetted width was 1.5 m, average depth 0.12 m and gradient was 1.0%. The inlet afforded both very good spawning and rearing (undercut banks, pools, L.O.D., overhanging vegetation, instream vegetation) habitat, however no overwintering habitat was observed.

See point sample card for additional information.

Lake: **Simpson**

Unnamed C. - inlet #2

This creek enters the lake along the north shore. The first 250 m of the inlet was investigated. The initial 10 m offers excellent spawning habitat and the remaining area had poor spawning capabilities, limited to small isolated packets of gravel behind boulders. This inlet offers a moderate amount of rearing habitat comprised of undercut banks, L.W.D., pools and overhanging vegetation. The wetted width was 1.4 m, average depth 0.25 m and field gradient was 1.0%, 100 m upstream of the lake.

See point sample card for additional information.

Unnamed springfed/seasonal inlets (7)

Simpson Lake has an additional seven inlets. Three springfed inlets enter along the west shore. Three seasonal inlets drain into Simpson Lake, two at the southeast shore and one at the north shore. The drainage of the low lying marsh located on the north shore creates a seventh inlet.

Lake: **Simpson**

FISHERIES MANAGEMENT COMMENTS

An overnight net set, and two minnow traps fishing for 13.5 hours yielded no fish. The lake is therefore believed to be barren of all fish species. Numerous cascades/falls are present on the outlet (as derived from NTS Map No. 93-0/10, edition 3), some of which may be barriers to upstream fish passage. Two inlets and the outlet provide a moderate degree of spawning and rearing habitat. Dissolved oxygen measurements taken during the winter of 1990/91 indicates sufficient levels to support a fish population.

This lake is suitable for a sportfish introduction. The outlet stream is not believed to be a barrier to downstream fish migration, therefore any fish introductions should consider potential impacts on native fish species of the Pine River drainage. If this lake is stocked and road access is created, gravel placement in key areas of the inlets and outlets could significantly increase natural recruitment.

HISTORY OF PREVIOUS SURVEYS

Lake Surveys:

An oxygen/temperature series was collected on February 28. 1990 by T. Down and T. Euchner, Fish and Wildlife Branch, BC Environment, Fort St. John.

Other Related Surveys:

None known.

Lake: **Simpson**

WATER CHEMISTRY SUMMARY **Limnology Station No. 1**

Field Conditions:

Date:	Sept. 6, 1991		
Time:	1100 hrs	Air Temperature:	17.0 ^{0}C
Wind Velocity:	0.0 km/hr	Wind Direction:	
Cloud Cover:	8/10 o.c.	Surface Condition:	calm
Secchi Disc:	7.8 m	Water Colour:	emerald green

Method(s) Used:

Dissolved Oxygen:	YSI model 58 oxygen/temperature meter
Water Temperature:	YSI model 58 oxygen/temperature meter
Air Temperature:	Hand-held alcohol thermometer
pH (field):	Hach pH field test kit
H2S (field):	Hach H2S field test kit
Laboratory Used:	Zenon Environmental Inc. B.C. Laboratory Services
Water Sampler:	Verticle Alpha Water Bottle (Vandorn)
Substrate Sampler:	Substrate sample not taken

Water Sample Chemistry: SEAM Site No.: Not determined

	Sampling Depths			
	Surface (0 m)		Lower (20.0 m)	
pH (field)	7.9		7.1	
pH (lab)	8.2		7.6	
Specific Conductance (lab)	202	umhos/cm	213	umhos/cm
Filterable Residue 105°C (lab)	124	mg/l	130	mg/l
H2S (field)	--	mg/l	0	mg/l

Bottom Depth:	21.4	m
Substrate Sample Depth:	--	m

SUMMER OXYGEN/TEMPERATURE DATA

September 6, 1991.

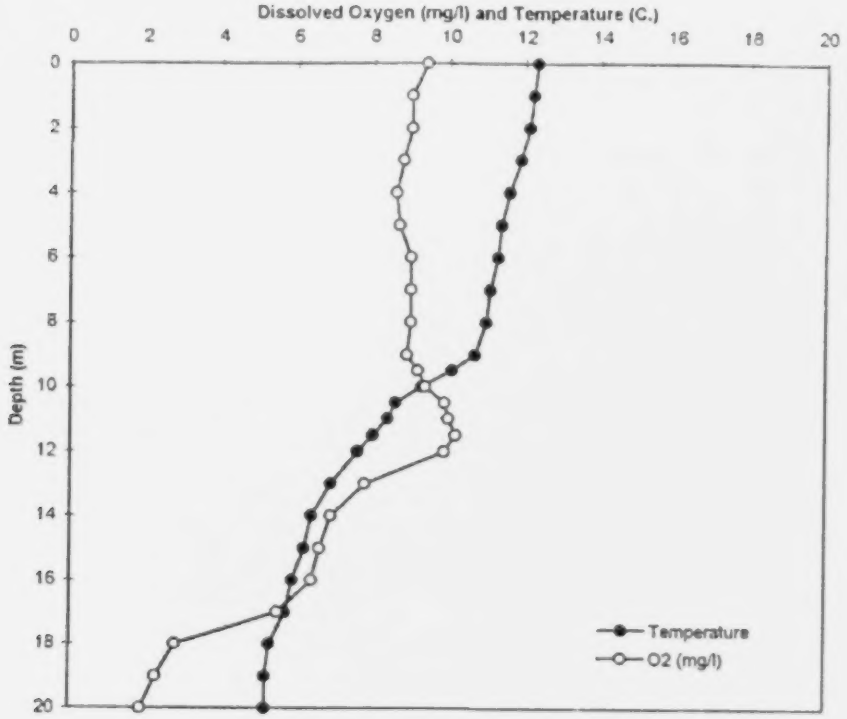
DEPTH (m)	O2 (mg/l)	TEMP (°C)
Surface	9.4	12.3
1.0	9.0	12.2
2.0	9.0	12.1
3.0	8.8	11.9
4.0	8.6	11.6
5.0	8.7	11.4
6.0	9.0	11.3
7.0	9.0	11.1
8.0	9.0	11.0
9.0	8.9	10.7
9.5	9.2	10.1
10.0	9.4	9.3
10.5	9.9	8.6
11.0	10.0	8.4
11.5	10.2	8.0
12.0	9.9	7.6
13.0	7.8	6.9
14.0	6.9	6.4
15.0	6.5	6.2
16.0	6.4	5.9
17.0	5.5	5.7
18.0	2.8	5.3
19.0	2.3	5.2
20.0	1.9	5.2
21.4	Bottom	

WINTER OXYGEN/TEMPERATURE DATA

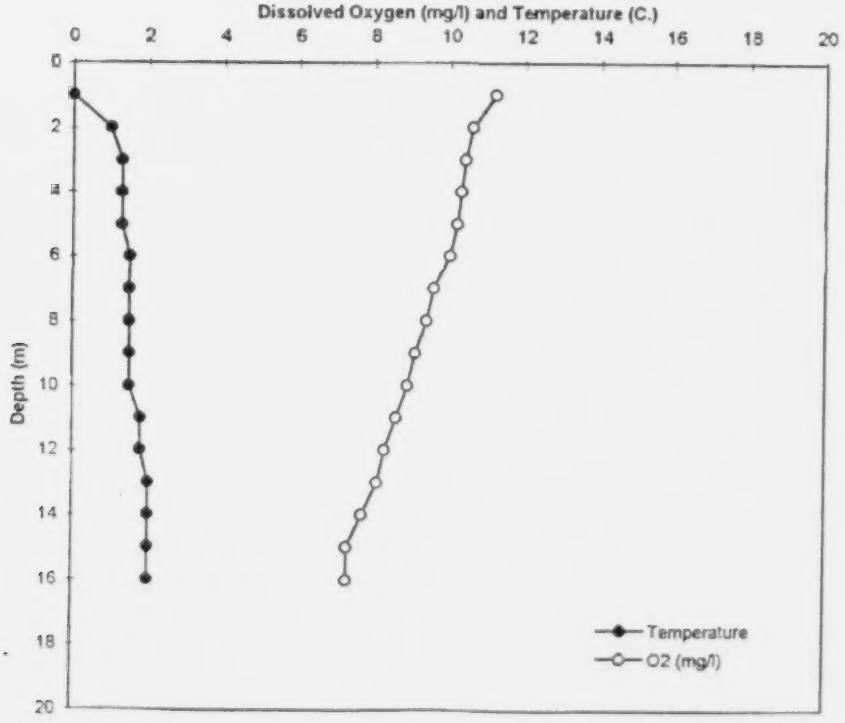
February 28, 1990 Ice Depth = 100 cm

DEPTH (m)	O2 (mg/l)	TEMP (°C)
Surface		
1.0	11.2	0
2.0	10.6	1
3.0	10.4	1.25
4.0	10.3	1.25
5.0	10.2	1.25
6.0	10.0	1.5
7.0	9.6	1.5
8.0	9.4	1.5
9.0	9.1	1.5
10.0	8.9	1.5
11.0	8.6	1.75
12.0	8.3	1.75
13.0	8.1	2.0
14.0	7.7	2.0
15.0	7.3	2.0
16.0	7.3	2.0
17.3	Bottom	

SUMMER



WINTER



Lake: **Simpson**

NETTING RECORD

Mesh sizes experimental order: 25, 76, 51, 89, 38, 64 mm

NETTING SITE #1

Type:	Sinking monofilament		
Date Set:	September 5, 1991	Time:	2020 hrs
Date Lifted:	September 6, 1991	Time:	0950 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm	Depth:	0.7 m
		Substrate:	organics
Deep End Mesh Size:	64 mm	Depth:	10.5 m
		Substrate:	organics

Comments:

Some algae noted on net.

Lake: **Simpson**

LAKE CATCH SUMMARY

Comments:

NO FISH NETTED.

Minnow Traps:

BAIT: Sardines

#	HOURS	DEPTH (m)	SUBSTRATE	SPECIES	SIZE RANGE (cm)
1	13.50	0.7	organics	1 beetle, 1 leech	
2	13.00	0.6	organics	6 leeches	

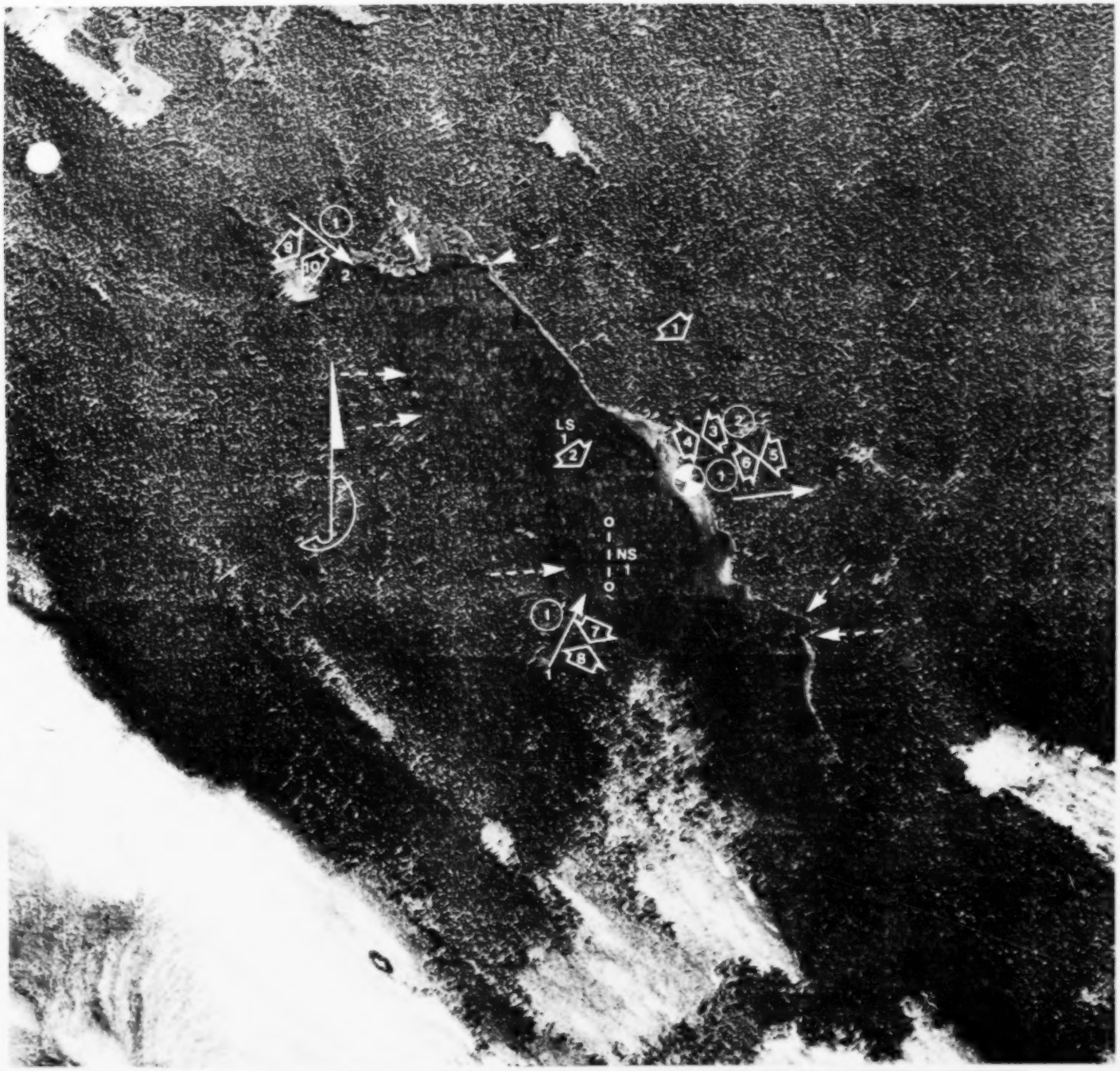


	Plate number, area, and direction
(2)	Point sample, number, and location
	Bench mark
LS 1	Limno station location and number
0 - - - 0 NS 1	Netting site location and number
← 1	Stream flow direction and number

LOCATION OF INVENTORY SITES

Figure 1

Lake: Simpson

Reference No.: B.C. 85033:60

Reference Date: July, 1985

Scale 1:10362

Lake: **Simpson**

PHOTOGRAPH DIRECTORY

Negative #	Plate #	Description
R103:21	1	Aerial view of Simpson Lake looking southeast.
R104:14	2	Panoramic view looking southeast, taken from limno station. Note diseased or fire damaged patch of trees to the right.
R104:4	3	Upstream view of point sample site #1, taken approximately 40 m downstream from lake on outlet.
R104:5	4	Downstream view of point sample site #1, taken approximately 40 m downstream from lake on outlet.
R104:2	5	Upstream view of point sample site #2, taken approximately 90 m downstream from lake on outlet. Field gradient was 9%.
R104:3	6	Downstream view of point sample site #2, taken approximately 90 m downstream from lake on outlet.
R104:1a	7	Upstream view of point sample site, taken approximately 50 m upstream from lake on inlet #1.
R104:1b	8	Downstream view of point sample site, taken approximately 50 m upstream from lake on inlet #1.
R104:7	9	Upstream view of point sample site, taken approximately 100 m upstream from lake on inlet #2.
R104:6	10	Downstream view of point sample site, taken approximately 100 m upstream from lake on inlet #2.

Lake: **Simpson**

Plate 1: Aerial view of Simpson Lake looking southeast.

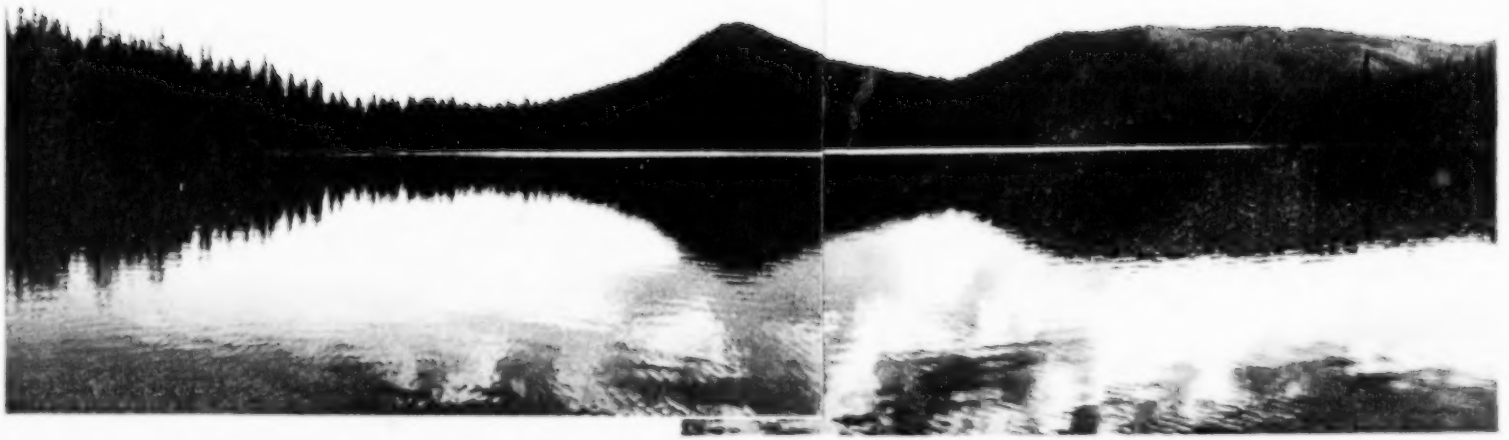


Plate 2: Panoramic view looking southeast, taken from limno station.
Note diseased or fire damaged patch of trees to the right.

Plate 3:
Upstream view of point sample site #1, taken approx. 40 m downstream from lake on outlet.

Plate 4:
Downstream view of point sample site #1, taken approximately 40 m downstream from lake on outlet.

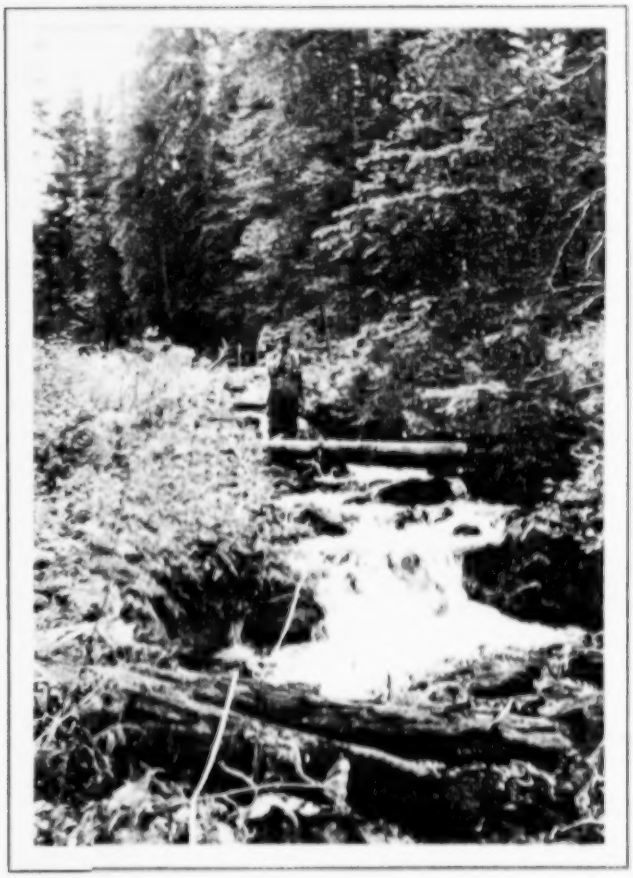


Plate 5:
Upstream view of point sample site #2, taken approximately 90 m downstream from lake on outlet. Field gradient was 9%

Plate 6: Downstream view of point sample site #2, taken approximately 90 m downstream from lake on outlet.

Plate 7:
Upstream view of point sample site, taken approximately 50 m upstream from lake on inlet #1.

Plate 8:
Downstream view of point sample site, taken approximately 50 m upstream from lake on inlet #1.

Plate 9:
Upstream view of point sample site, taken approximately 100 m upstream from lake on inlet #2.

Plate 10:
Downstream view of point sample site, taken approximately 100 m upstream from lake on inlet #2.

Lake: Simpson

Appendix A

LABORATORY REPORT

Water Chemistry Analysis

ZENON ENVIRONMENTAL INC.
B.C. LABORATORY SERVICES
Report for form 00420151

~~Resource Quality Sect.(RQ)-Water Prog.~~ BD ATTN: TED DOWN

Site: NOSITE "CALLAZON" LAKE ~~GRIZZLY LAKE~~ SIMPSON LAKE

Submitted by (10669) EUCHNER R B

Address (00) ENVIRONMENT & PARKS
10142 101ST AVENUE
FORT ST JOHN B C
V1J2B3

Phone No. 787-3294

Audit Sample ( )
Client study reference code (SP)
Sampling agency code ( )

Site (NOSITE) "CALLAZON" LAKE

Sample Adjective ( )
Sample State (FW) Fresh Water
Sample Descriptor (GE) General

This form was processed to the computer on 6-MAR-1990 as REGULAR
The cost for analyzing samples for this form is

Routine analysis:	$	266.33
Special analysis:	$	49.32
Total	$	315.65

Site: NOSITE "CALLAZON" LAKE ~~SIMPSON LAKE~~ SIMPSON LAKE

From :90/02/28:1000 To :90/02/28:1000
Depth Range : 0.0 0.0 Tide :
Sample State: Fresh Water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Sparcode/Medium/Pres'n)
Res. Filterable 1.0u	116	mg/L	Gravimetric 1.0u Filter (007H1032/02/36)
Nitrogen Kjel. Tot(N)	0.42	mg/L	Froz. Dig. Aut. Color (01132660/02/36)
Nitrogen Total	0.46	mg/L	Calculated Result (0114CALC/--/--)
Nitrogen NO3+NO2 Dis	0.04	mg/L	Froz. Aut. Cadmium Red'n (11092670/02/36)
Phosphorus Total	0.020	mg/L	Froz. Dig. Aut. Ascorbic Ac (P--T2710/02/36)
H			Special Analysis (0004GSSP/02/36)
8.0 pH UNITS			
The cost of this special analysis was $	4.93		
Specific Conductance			Special Analysis (0011GSSP/02/36)
207 uS/CM			
The cost of this special analysis was $	7.40		

Site: NOSITE "CALLAZON" LAKE ~~GRATON LAKE~~ SIMPSON LAKE

From : 90/02/28: 1005 To : 90/02/28: 1005
Depth Range : 0.0 0.0 Tide :
Sample State: Fresh Water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Sparcode/Medium/Pres'n)
Res. Filterable 1.0u	66	mg/L	Gravimetric 1.0u Filter (007H1032/02/36)
Nitrogen Kjel. Tot(N)	0.21	mg/L	Froz. Dig. Aut. Color (01132660/02/36)
Nitrogen Total	0.24	mg/L	Calculated Result (0114CALC/--/--)
Nitrogen NO3+NO2 Dis	0.03	mg/L	Froz. Aut. Cadmium Red'n (11092670/02/36)
Phosphorus Total	0.014	mg/L	Froz. Dig. Aut. Ascorbic Ac (P--T2710/02/36)
pH			Special Analysis (0004GSSP/02/36)
7.5 pH UNITS			
The cost of this special analysis was $	4.93		
Specific Conductance			Special Analysis (0011GSSP/02/36)
130 uS/CM			
The cost of this special analysis was $	7.40		

B.C. LABORATORY SERVICES
Report for form 00420151
Resource Quality Sect. (RG)-Water Prog ATTN: TED DOWN Sample 89022

Site: NOSITE "CALLAZON" LAKE ~~CARSON LAKE~~ SIMPSON LAKE

From : 90/02/28: 1010 To : 90/02/28: 1010
Depth Range : 17.0 17.0 Tide :
Sample State: Fresh Water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Sparcode/Medium/Pres'n)
Res. Filterable 1.0u	122	mg/L	Gravimetric 1.0u Filter (007H1032/02/36)
Nitrogen Kjel. Tot(N)	0.08	mg/L	Froz. Dig. Aut. Color (01132660/02/36)
Nitrogen Total	0.15	mg/L	Calculated Result (0114CALC/--/--)
Nitrogen NO3+NO2 Dis	0.07	mg/L	Froz. Aut. Cadmium Red'n (11092670/02/36)
Phosphorus Total	0.012	mg/L	Froz. Dig. Aut. Ascorbic Ac (P--T2710/02/36)
pH			Special Analysis (0004GSSP/02/36)
8.0 pH UNITS The cost of this special analysis was $	4.93		
Specific Conductance			Special Analysis (0011GSSP/02/36)
225 uS/CM The cost of this special analysis was $	7.40		

Site: NOSITE "CALLAZON" LAKE ~~GREEN LAKE~~ SIMPSON LAKE

From : 90/02/28: 1015 To : 90/02/28: 1015
Depth Range : 17.0 17.0 Tide :
Sample State: Fresh Water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Sparcode/Medium/Pres'n)
Res. Filterable 1.0u	84	mg/L	Gravimetric 1.0u Filter (007H1032/02/36)
Nitrogen Kjel. Tot(N)	0.23	mg/L	Froz. Dig. Aut. Color (01132660/02/36)
Nitrogen Total	0.30	mg/L	Calculated Result (0114CALC/--/--)
Nitrogen NO3+NO2 Dis	0.07	mg/L	Froz. Aut. Cadmium Red'n (11092670/02/36)
Phosphorus Total	0.022	mg/L	Froz. Dig. Aut. Ascorbic Ac (P--T2710/02/36)
pH			Special Analysis (0004GSSP/02/36)
7.6 pH UNITS The cost of this special analysis was $	4.93		
Specific Conductance			Special Analysis (0011GSSP/02/36)
154 uS/CM The cost of this special analysis was $	7.40		

Site: NOSITE UNNAMED "CALLAZON" LAKE SIMPSON LAKE

Submitted by (ZOZ96) BLACKMAN D

Address (07) Waste Management Branch
Northern Region
3rd Floor, 1011 4th Avenue
Prince George, BC V2L 3H9

Phone No. 963-6944

Audit Sample ( )
Client study reference code ( )
Sampling agency code (9i)

Site (NOSITE) UNNAMED "CALLAZON" LAKE

Sample Adjective ( )
Sample State (FW) Fresh Water
Sample Descriptor (GE) General

This form was processed to the computer on 9-SEP-1991 as REGULAR
The cost for analyzing samples for this form is

Routine analysis:	0	114.84
Special analysis:	0	0.00
Total	0	114.84

Site: NORITE UNNAMED ~~"CALLAZON~~ CREEK ~~(2 [illegible])~~ SIMSON LAKE

From : 91/09/06 0001 To : 91/09/06 0001
Depth Range : 0.0 0.0 Tide :
Sample State: Fresh Water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Barcode/Medium/Prep'n)
pH	8.2	pH units	Automated pH Meter (0004220/02/01)
Residue Nonfilt	< 1	mg/L	Grav. F ca Buchner, 105C (0003070/02/01)
Specific Conductance	202	uS/cm	Cond. Meter Siebold (0011160/02/01)
Res. Filterable 1.0u	124	mg/L	Gravimetric 1.0u Filter (0007032/02/01)
Alkalinity Total A.S	103	mg/L	Automated Electrometer (0102120/02/01)

FISH - PRINCE GEORGE ATTN: ALLISTER McLEAN Sample 91017266

Site: MOBITE UNNAMED "CALLAZON" LAKE ~~GRIZZLY LAKE~~ SIMPSON LAKE

From : 91/09/06: 0002 To : 91/09/06: 0002
Depth Range : 20.0 20.0 Tide :
Sample State: Fresh Water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Sparcode/Medium/Prep'n)
pH	7.6	pH units	Automated pH Meter (0004I220/02/01)
Residue Nonfilt.	< 1	mg/L	Gravi 9 cm Buchner, 105C (0006I070/02/01)
Specific Conductance	213	uS/cm	Cond. Meter Sibold (0011I160/02/01)
Res. Filterable 1.0u	130	mg/L	Gravimetric 1.0u Filter (0079I032/02/01)
Alkalinity Total 4.5	108	mg/L	Automated Electrometer (0102I210/02/01)

Lake: **Simpson**

Appendix B

TRIBUTARY STREAM DATA

Lake: **Simpson**

System Name: **Unnamed C.** **outlet**

System No.: **234-8419**

Site Location: Sample Site #1, located 40 m downstream of lake on outlet.

Date:	Sept. 5, 1991	Time:	1624 hrs
Channel Width:	7.0 m	Water Temp.:	7.5 °C
Wetted Width:	7.0 m	Stage (flow)	low
Max. Depth:	14 cm	Velocity:	0.5 m/sec
Avg. Depth:	20 cm	Field Gradient:	1.0 %
Turbidity:	20 cm	Colour:	gin clear

Flood Signs:

Height:	35 cm
Type:	N/A

Substrate Breakdown:

Fines	Small Gravel	Large Gravel	Cobble
-- %	10 %	30 %	60 %

Boulder	Bedrock
-- %	-- %

Substrate Compaction: moderate Sand: 0 %

Banks:

	Form	Height	Stability
Right	steep	1.5 m	stable due to rooted vegetation
Left	steep	1.5 m	stable due to rooted vegetation

Comments:

- Field gradient and velocity measured over 10 m.
- Minimal spawning habitat.
- Rearing habitat good, but minimal area.
- No overwintering capabilities.

Lake: **Simpson**

System Name: **Unnamed C.** **outlet**

System No.: **234-8419**

Site Location: Sample Site #2, located 100 m downstream of lake on outlet.

Date:	Sept. 5, 1991	Time:	1600 hrs
Channel Width:	2.5 m	Water Temp.:	7.5 °C
Wetted Width:	2.5 m	Stage (flow)	low
Max. Depth:	60 cm	Velocity:	1.4 m/sec
Avg. Depth:	45 cm	Field Gradient:	9.0 %
Turbidity:	55 cm	Colour:	gin clear

Flood Signs:

Height: 70 cm

Type: N/A

Substrate Breakdown:

Fines	Small Gravel	Large Gravel	Cobble
-- %	-- %	-- %	-- %
Boulder	Bedrock		
100 %	**-%**		

Substrate Compaction: N/A Sand: 0 %

Banks:

	Form	Height	Stability
Right	boulder	0.3 m	stable due to boulders
Left	boulder	0.3 m	stable due to boulders

Comments:

- Field gradient measured over 13.0 m.
- Velocity measured over 11.0 m.
- Site is a cascade, steep gradient.
- Not a barrier to upstream fish passage.
- No usable fish habitat.

Lake: **Simpson**

System Name: **Unnamed C.** **inlet #1**

System No.:

Site Location: Sample Site #1, located 50 m upstream of lake on inlet #1

Date:	Sept. 5, 1991	Time:	1440 hrs
Channel Width:	2.0 m	Water Temp.:	7.5 °C
Wetted Width:	1.5 m	Stage (flow)	low
Max. Depth:	16 cm	Velocity:	0.3 m/sec
Avg. Depth:	12 cm	Field Gradient:	1.0 %
Turbidity:	16 cm	Colour:	gin clear

Flood Signs:

Height: 12 cm

Type: N/A

Substrate Breakdown:

Fines	Small Gravel	Large Gravel	Cobble
5 %	20 %	70 %	5 %
Boulder	**Bedrock**		
0 %	0 %		

Substrate Compaction: low Sand: 10 %

Banks:

	Form	Height	Stability
Right	undercut	0.16 m	moderate due to rooted vegetation
Left	undercut	0.18 m	moderate due to rooted vegetation

Comments:

- Field gradient measure over 7.5 m.
- Velocity measured over 4.0 m.
- Spawning and rearing habitat is very good (undercut banks, pools, LOD, overstream vegetation, instream vegetation).
- No adult overwintering habitat present.

Lake: **Simpson**

System Name: **Unnamed C.** **inlet #2**

System No.:

Site Location: Sample Site #1, located 100 m upstream of lake on inlet #2.

Date:	Sept. 5, 1991	Time:	1735 hrs
Channel Width:	1.4 m	Water Temp.:	7.5 °C
Wetted Width:	1.4 m	Stage (flow)	low
Max. Depth:	30 cm	Velocity:	0.3 m/sec
Avg. Depth:	25 cm	Field Gradient:	1.0 %
Turbidity:	30 cm	Colour:	gin clear

Flood Signs:

Height: 14 cm

Type: N/A

Substrate Breakdown:

Fines	Small Gravel	Large Gravel	Cobble
10 %	**10 %**	**40 %**	**40 %**
Boulder	Bedrock		
-- %	-- %		

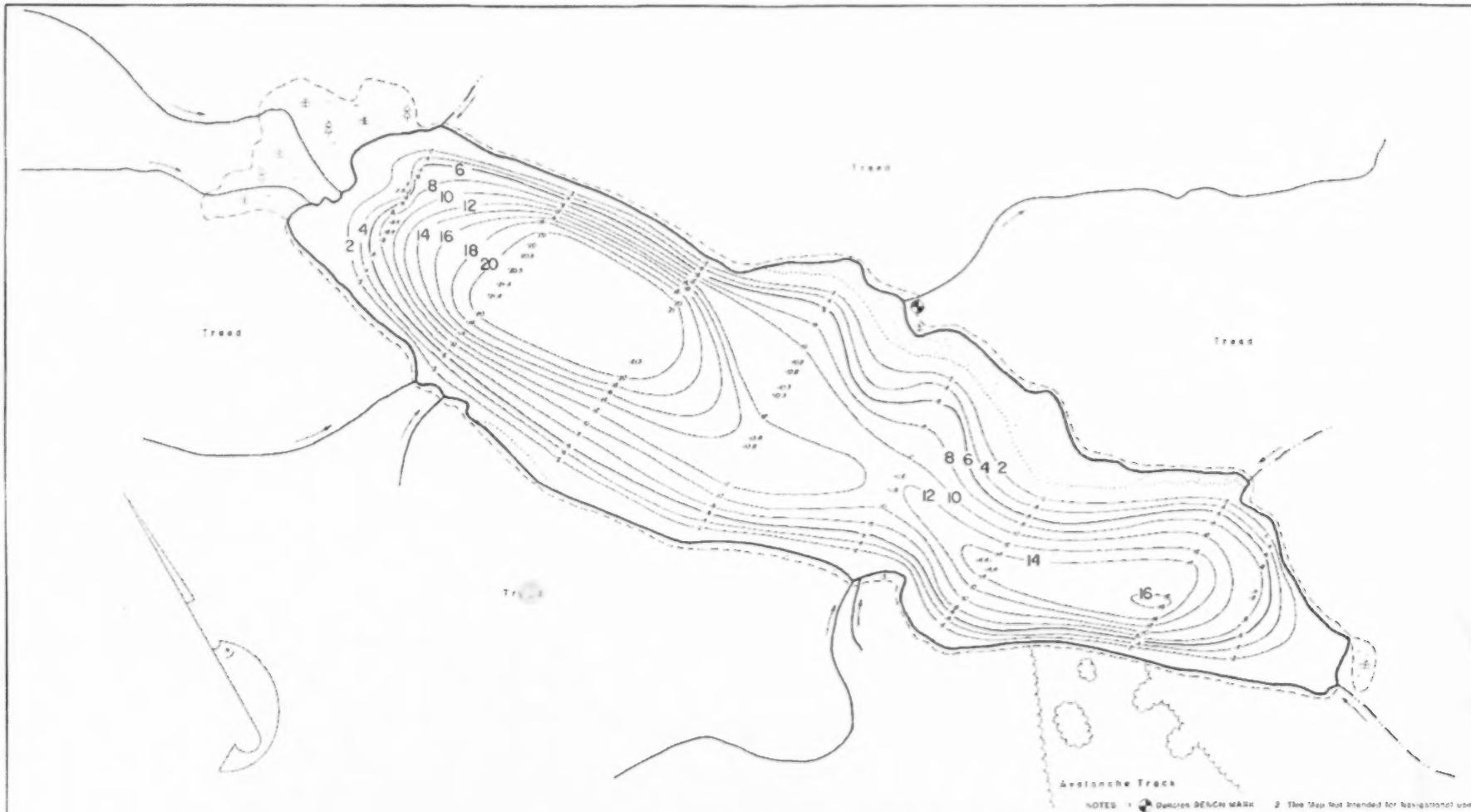
Substrate Compaction: low Sand: 0 %

Banks:

	Form	Height	Stability
Right	undercut	0.3 m	moderate due to rooted vegetation
Left	undercut	0.3 m	moderate due to rooted vegetation

Comments:

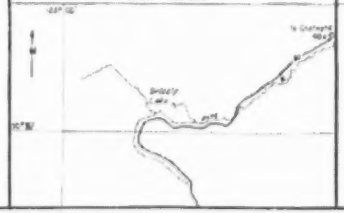
- Field gradient measure over 7.0 m.
- Velocity measured over 6.0 m.
- Spawning capabilities are low due to large substrate size.
- Moderate rearing capabilities (undercut banks, LOD, pool, overstream vegetation)



NOTES: 1. Denotes BENCH MARK 2. This Map not intended for Navigational use Uncharted Rocks and Shoals May Exist

Reduced to
50%
of Original

INSET MAP
Scale 1:50,000



SURVEYED BY A.R. LANGSTON DATE SEPT. 5, 1978
OUTLINE SOURCE: AIRPHOTO BC 85033 60 (JULY 1985)

STATISTICS AT TIME OF SURVEY

ELEVATION	1204 m.±
SURFACE AREA	312 000 sq. m.
AREA ABOVE 4m. CONTOUR	116 500 sq. m
VOLUME	2 760 000 cu. m.
MEAN DEPTH	8.8 m.
MAX. DEPTH	21.5 m.
PERIMETER, MAIN SHORE	3060 m.
PERIMETER, ISLANDS	m.
BENCH MARK HEIGHT ABOVE WATER LEVEL	2.0 m.

Province of British Columbia Ministry of Environment

FISHERIES BRANCH
INVENTORY OPERATIONS

GRIZZLY LAKE*

DEPTHS IN METERS

WATERSHED CODE 234-849		U.T.M. CO-ORDINATE 10 520893 6054121	
MAP 7-SI	FAIR DWG W.A.D.	REV. DATE	
PLOTTING P.S.D.	FAIR DWG CHECK J.A.B.	SCALE	1:3000
CONTOURS J.A.B.	DRAFT DATE FEB. 25, 1980		
CALCULATIONS D.M.C.	APPROVED	N.T.S. NO.	930/10
TECH CHECK J.A.B.			